CPA 08/798,703

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     (FILE 'HOME' ENTERED AT 15:11:50 ON 20 JUL 2000)

     FILE 'USPATFULL' ENTERED AT 15:12:00 ON 20 JUL 2000
L1          6696 S (713/?)/NCL
L2          8531 S (709/?)/NCL
L3           829 S "TCP/IP" PROTOCOL
L4         36036 S REMOT? CONTROL?
L5             2 S ADVERTIS? PUBLISHER
L6             3 S AD PUBLISHER#
L7             5 S L5 OR L6
L8         14582 S L1 OR L2
L9             2 S L3 (P) L4
L10           36 S L3 AND L4 AND L8
L11           25 S L10 AND HOST
L12           22 S L11 AND CLIENT#
L13           14 S L12 AND ADVERTIS?
L14           14 S L13 AND (AVAILABILITY OR CAPACITY)
L15            0 S L14 AND JAVA
L16            0 S L14 AND HTML
L17          131 S ESTABLISH? (P)CONNECT? (P) CLIENT# (P) HOST
L18          195 S URL ADDRESS?
L19            1 S L17 AND L18 AND JAVA AND HTML
L20            3 S L10 AND JAVA
L21            6 S L10 AND HTML
L22            7 S L20 OR L21
L23            2 S L22 AND HOST
L24            2 S L23 AND CLIENT#
L25           22 S L10 AND HOST AND CLIENT#
L26            2 S L25 AND URL
L27            1 S L25 AND L17
L28        53742 S AD OR ADVERTIS?
L29        17055 S AD PUBLISHER# OR ADVERTIS?
L30           14 S L25 AND L29
L31            0 S L30 AND JAVA
L32            0 S L30 AND HTML
L33            2 S L25 AND HTML
L34            1 S L25 AND JAVA
L35            2 S L33 OR L34
L36            6 S L10 AND HTML
L37            3 S L10 AND JAVA
L38            7 S L36 OR L37
L39            5 S L38 NOT L35
L40           14 S L25 AND L29
L41           14 S L40 NOT L39
L42           19 S L3 AND L4 AND L29 AND HOST AND CLIENT#
L43            5 S L42 NOT L41

=> D 1-5


L43  ANSWER 1 OF 5  USPATFULL
AN     1999:154138  USPATFULL
TI     Internet-based system for enabling information-related transactions
over
       the internet using Java-enabled internet terminals provided with bar
       code symbol readers for reading Java-Applet encoded bar code symbols
IN     Wilz, Sr., David M., Sewell, NJ, United States
       Knowles, Carl H., Moorestown, NJ, United States
PA     Metrologic Instruments, Inc., Blackwood, NJ, United States (U.S.
```

corporation)
PI US 5992752 19[redacted]130
AI US 1997-869164 [redacted]9970604 (8)
RLI Continuation-in-part of Ser. No. US 1997-846219, filed on 25 Apr 1997 Ser. No. Ser. No. US 1996-645331, filed on 13 May 1996, now patented, Pat. No. US 5844227 Ser. No. Ser. No. US 1996-615054, filed on 12 Mar 1996 Ser. No. Ser. No. US 1995-573949, filed on 18 Dec 1995, now abandoned Ser. No. Ser. No. US 1994-292237, filed on 17 Aug 1994, now patented, Pat. No. US 5808285 Ser. No. Ser. No. US 1994-365193, filed on
28 Dec 1994, now patented, Pat. No. US 5557093 Ser. No. Ser. No. US 1994-293493, filed on 19 Aug 1994, now patented, Pat. No. US 5525789 Ser. No. Ser. No. US 1995-561479, filed on 20 Nov 1995, now patented, Pat. No. US 5661292 Ser. No. Ser. No. US 1993-278109, filed on 24 Nov 1993, now patented, Pat. No. US 5484992 Ser. No. Ser. No. US 1995-489305, filed on 9 Jun 1995, now abandoned Ser. No. Ser. No. US 1995-476069, filed on 7 Jun 1995, now patented, Pat. No. US 5591953 Ser.
No. Ser. No. US 1996-584135, filed on 11 Jan 1996, now patented, Pat. No. US 5616908 And Ser. No. US 1997-838501, filed on 7 Apr 1997, now patented, Pat. No. US 5869819 which is a continuation-in-part of Ser. No. US 1997-820540, filed on 19 Mar 1997 which is a continuation-in-part
of Ser. No. US 1996-753367, filed on 25 Nov 1996
DT Utility
LN.CNT 2021
INCL INCLM: 235/472.010
INCLS: 235/462.010; 235/462.250
NCL NCLM: 235/472.010
NCLS: 235/462.010; 235/462.250
IC [6]
ICM: G06K007-10
EXF 235/462; 235/454; 235/463; 235/467; 235/469; 235/375; 235/470; 235/462.01; 235/462.25; 235/462.24; 235/472

L43 ANSWER 2 OF 5 USPATFULL
AN 1998:129335 USPATFULL
TI Distributed connection-oriented services for switched communications networks
IN Dobbins, Kurt, Bedford, NH, United States
Grant, Thomas A., Derry, NH, United States
Ruffen, David J., Salem, NH, United States
Kane, Laura, Merrimack, NH, United States
Len, Theodore, Amherst, NH, United States
Andlauer, Philip, Londonderry, NH, United States
Bahi, David H., Manchester, NH, United States
Yohe, Kevin, Amherst, NH, United States
Fee, Brendan, Nashua, NH, United States
Oliver, Chris, Rochester, NH, United States
Cullerot, David L., Manchester, NH, United States
Skubisz, Michael, Durham, NH, United States
PA Cabletron Systems, Inc., Rochester, NH, United States (U.S. corporation)
PI US 5825772 19981020
AI US 1996-626596 19960402 (8)
RLI Continuation-in-part of Ser. No. US 1995-559738, filed on 15 Nov 1995, now patented, Pat. No. US 5684800
DT Utility
LN.CNT 1686
INCL INCLM: 370/396.000
INCLS: 370/401.000; 370/410.000
NCL NCLM: 370/396.000
NCLS: 370/401.000; 370/410.000
IC [6]
ICM: H04L012-56

ICS: H04L012-44
EXF 370/216; 370/2[redacted]370/238; 370/256; 370/395; 37[redacted]96; 370/400; 370/401; 370/402; 370/40[redacted]370/408; 370/351; 370/410

L43 ANSWER 3 OF 5 USPATFULL
AN 1998:86949 USPATFULL
TI Method and apparatus for multiprotocol operation of a networked peripheral
IN Kalwitz, George A., Costa Mesa, CA, United States
Russell, William C., Laguna Hills, CA, United States
Barrett, Lorraine F., Yorba Linda, CA, United States
Wadsworth, Robert D., Costa Mesa, CA, United States
Kraslavsky, Andrew J., Rancho Santa Margarita, CA, United States
PA Canon Kabushiki Kaisha, Tokyo, Japan (non-U.S. corporation)
PI US 5784622 19980721
AI US 1992-978380 19921118 (7)
DT Utility
LN.CNT 3341
INCL INCLM: 395/726.000
NCL NCLM: 710/200.000
IC [6]
ICM: G06F013-14
EXF 395/200; 395/726; 364/240.8

L43 ANSWER 4 OF 5 USPATFULL
AN 97:21407 USPATFULL
TI Method and apparatus for interfacing a peripheral to a local area network
IN Russell, William C., Laguna Hills, CA, United States
Kraslavsky, Andrew J., Rancho Santa Margarita, CA, United States
Wadsworth, Robert D., Costa Mesa, CA, United States
Barrett, Lorraine F., Yorba Linda, CA, United States
Kalwitz, George A., Costa Mesa, CA, United States
Ip, Tony K., Lake Forest, CA, United States
Kuver, Walter D., Laguna Hills, CA, United States
PA Canon Kabushiki Kaisha, Tokyo, Japan (non-U.S. corporation)
PI US 5611046 19970311
AI US 1992-978369 19921118 (7)
DT Utility
LN.CNT 3419
INCL INCLM: 395/200.100
INCLS: 395/828.000; 364/DIG.001
NCL NCLM: 358/001.160
NCLS: 710/008.000; 710/015.000; 710/019.000
IC [6]
ICM: G06F013-00
EXF 395/200; 395/325; 395/275; 395/828

L43 ANSWER 5 OF 5 USPATFULL
AN 94:53992 USPATFULL
TI Method and apparatus for obtaining and for controlling the status of a networked peripheral
IN Barrett, Lorraine F., Yorba Linda, CA, United States
Russell, William C., Laguna Hills, CA, United States
Kraslavsky, Andrew J., Rancho Santa Margarita, CA, United States
Wadsworth, Robert D., Costa Mesa, CA, United States
PA Canon Information Systems, Inc., Costa Mesa, CA, United States (U.S. corporation)
PI US 5323393 19940621
AI US 1992-978281 19921118 (7)
DT Utility
LN.CNT 3253
INCL INCLM: 370/085.800
INCLS: 340/825.220
NCL NCLM: 370/449.000

NCLS: 340/825.220
IC [5]
ICM: H04Q005-14
EXF 340/825.06; 340/825.08; 340/825.22; 178/23R; 364/131; 364/519; 370/85.1;
370/85.8

5,838,682

Method and apparatus for establishing communications with a remote node on a switched network based on hypertext dialing information received from a packet network

Inventor(s): Dekelbaum, George J., Basking Ridge, NJ, United States
Fischer, Philip J., Bedminster, NJ, United States
Judice, Charles N., Rochester, NY, United States
Backus, Richard G., Manassas, VA, United States
Flaherty, Stephen J., Upper Marlboro, MD, United States
Assignee: Bell Atlantic Network Services, Inc., Arlington, VA, United States (U.S. corporation)
Appl. No.: 95-563243
Filed: 28 Nov 1995

Int. Cl. H04L012-66
Issue U.S. Cl. 370/401.000
Current U.S. Cl. 370/401.000; 379/090.010; 379/093.070; 379/093.120; 379/093.140; 379/093.170
Field of Search 370/351; 370/352; 370/355; 370/356; 370/401; 370/408; 370/522; 370/524; 370/389; 370/392; 370/264; 379/354; 379/355

Reference Cited

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Christian Huitema and Phill Gross, The Internet Standards Process--Revision 2, Mar. 1994, Entire Document, Internet Architecture Board and Internet Engineering Steering Group.

Jon Postel, Internet Official Protocol Standards, November 1994, Entire

L19 ANSWER 1 OF 1 USPATFULL
AN 1998:145065 USPATFULL
TI Method and apparatus for establishing communications with a remote node on a switched network based on hypertext dialing information received from a packet network
IN Dekelbaum, George J., Basking Ridge, NJ, United States
Fischer, Philip J., Bedminster, NJ, United States
Judice, Charles N., Rochester, NY, United States
Backus, Richard G., Manassas, VA, United States
Flaherty, Stephen J., Upper Marlboro, MD, United States
PA Bell Atlantic Network Services, Inc., Arlington, VA, United States (U.S. corporation)
PI US 5838682 19981117
AI US 1995-563243 19951128 (8)
DT Utility
LN.CNT 1208
INCL INCLM: 370/401.000
NCL NCLM: 370/401.000
NCLS: 379/090.010; 379/093.070; 379/093.120; 379/093.140; 379/093.170
IC [6]
ICM: H04L012-66
EXF 370/351; 370/352; 370/355; 370/356; 370/401; 370/408; 370/522; 370/524; 370/389; 370/392; 370/264; 379/354; 379/355

=> d kwic

L19 ANSWER 1 OF 1 USPATFULL
SUMM . . . type Internet sites (e.g., FTP [file transfer protocol] and Gopher sites) without having to know the lengthy uniform resource locators (**URL**) **addresses** of the sites to be accessed. (The current Internet standard for URLs is given in the Network Working Group RFC. . . . or graphics (together known as "hyperlinks") to retrieve associated information. The browser interprets the hypertext formatted as hypertext markup language (**HTML**) and transmitted using hypertext transfer protocol (HTTP.) If the hypertext points to an information source outside of the current hypertext. . . . page, it initiates a service request to the URL associated with the selected hypertext. Thus, each page of information in **HTML** format includes not only text and graphics, but the embedded addresses of sites having related information.
SUMM . . . object is a Home Page. A Home Page is simply a document that has been composed or "markedup" using the **HTML**.
SUMM . . . the layout attributes. Examples of common markup languages include Postscript and the various proprietary markup languages used by word processors. **HTML** is not as encompassing as these examples. For example, while **HTML** can specify that a given piece of a" document is a header and/or that is should be rendered emphasized, the. . . . In contrast, Postscript can be used to specify very specific attributes such as 18 point courier bold left justified. The **HTML** standard used by the Internet is described in "A Beginner's Guide to **HTML**" available on the Internet. Further information about **HTML** can also be found at "http://www.gov.nb.ca/hotlist/htmldocs.htm".
SUMM A Web Browser such as Mosaic or Netscape is a client application that

can interpret **HTML** and communicate using the HTTP protocol. A browser may or may not know what to do with a resource that. . .

SUMM . . . and passes it to the OS TCP stack which includes code to handle

the data. The OS then initiates a **connection** with the server's **host** system. Once the OS and the **host** system **establish** communication, the OS ships the request to the **host**. This request is passed through the various protocol layers to the HTTP daemon or server. The server interprets the request, checks its MIME type, and sends the **client** the resource and information about the resource's MIME type. When the OS receives the resource it passes it back to the browser which examines the response. If the returned object is an **HTML** document, the browser displays the document on the computer display screen. If the object is a

MIME type that the. . . passing it the resource for processing. In the meantime, once the request has been satisfied, either the server or the **client** breaks the **connection** thus freeing up the browser for another request.

SUMM . . . analog POTS or ISDN service. The first communications interface

may include a Web Browser functionality for processing hypertext markup language (**HTML**) messages received from the Internet while the second communications interface may take the form of voice transmission and reception apparatus. . .

SUMM . . . feature of the invention, the terminal includes the capability to supply information to the remote nodes identifying one of the **HTML** messages received from the internetwork so as to allow the remote node to associate and coordinate the communications conducted on.

. .

SUMM According to another aspect of the invention, the first communications interface includes a first terminal application program system retrieving **HTML** messages from the selected remote site wherein the **HTML** messages have embedded therein (a) the address data, and (b) type information corresponding to the address data. The terminal

application program also includes a display processor for displaying the

HTML messages on the output device, e.g., video terminal, and for providing the address data in response to the input device,. . .

DRWD FIG. 6 is a graphical representation of a sample Web page including a **HTML** hot link to initiate a telephone call to a merchant.

DRWD FIG. 7 is a graphical representation of a client terminal running the Netscape browser displaying (i) a partial page of **HTML** format hypertext and (ii) a control panel for initiating a telephone call to a merchant.

DETD . . . Internet Server 102 which responds by sending the client the specified resource. The resource in this case may be an **HTML** document as shown in FIG. 6. At the bottom of the page, enclosed in triangular brackets ("<>") in the figure,. . .

DETD . . . Microsoft Windows. Alteratively, the autodialer functionality may be included as an applet embedded within a merchant's web page. Thus, the **HTML** object supplied by Internet Server 102 incorporates not only the telephone number to be dialed, but the executable content required. . . 100 but, in response to establishment of the connection, automatically request and/or identify the session ID from/to ACD 106. The **JAVA** language may be used for such an applet with Web Browser 14 being **JAVA** or HotJAVA compatible.

DETD . . . a session history, and to issue a session identification number

("session ID") to a client upon the client requesting a **HTML** page including autodialing hyperlinks. The sales representative solicits

the session ID from each caller upon initial contact and uses it. . .

DETD . . . addre[redacted]even in the absence of an outs[redacted]ding request from the client to the server. The server then can downlo[redacted] **HTML** data to the browser under local control (i.e., server "push" of the data) rather than merely responsive to a. . .

CLM What is claimed is:

. . . network comprises an internetwork of data networks and said first communications interface comprises a Web Browser processing hypertext markup language (**HTML**) messages received from the internetwork.

. . . device of claim 5 further comprising session identification means for supplying information to said remote node identifying one of the **HTML** messages received from the internetwork.

. . . 1, wherein said first communications interface comprises a first terminal application including: hypertext processing means for retrieving hypertext markup language (**HTML**) messages from the selected remote site, said **HTML** messages having embedded therein (a) said address data, and (b) type information corresponding to said address data; display processing means for displaying the **HTML** messages on said output device and for providing said address data in response to said input device designating said address. . .

. . . network comprises an internetwork of data networks and said first communications interface comprises a Web Browser processing hypertext markup language (**HTML**) messages received from the internetwork.

. . . device of claim 25 further comprising session identification means for supplying information to said remote node identifying one of the **HTML** messages received from the internetwork.

. . . 22, wherein said first communications interface comprises a first terminal application including: hypertext processing means for retrieving hypertext markup language (**HTML**) messages from the selected remote site, said **HTML** messages having embedded therein (a) said address data, and (b) type information corresponding to said address data; display processing means for displaying the **HTML** messages on said output device and for providing said address data in response to said input device designating said address. . .

. . . communications network comprises an internetwork of data networks and said pages of information comprise data formatted in hypertext markup language (**HTML**).

Document, Internet Architecture Board.

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Jon Crowcraft, An Introducing to HTML, May 10, 1995, Entire Document.

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Liu, Jian, Internet Primer for Information Professionals: A Basic Guide to Internet Networking Technology.xbook reviews, Sep. 22, 1993, Entire Document.

Art Unit - 263
Primary Examiner - Olms, Douglas W.
Assistant Examiner - Patel, Ajit
Attorney, Agent or Firm - Lowe, Price, LeBlanc & Becker

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46 Claim(s), 19 Drawing Figure(s), 15 Drawing Page(s)

ABSTRACT

An Internet type access system includes an autodialer for automatically establishing communications with a merchant's facility over a switch network while maintaining Internet connectivity over a packet data network. The autodialer, in combination with the merchant's server, coordinates between the Internet session and the newly established switched connectivity, the session history from the prior Internet session being supplied to a sales representative receiving the autodialed call. The sales representative is provided with a terminal for controlling the merchant's server to push data to the client in response to the interactive session simultaneously conducted over
the switched network.

L24 ANSWER 1 OF 2 USPATFULL
United States Patent

Patent Number: 6088730
Date of Patent: 11 Jul 2000

Methods and apparatus for downloading data between an information processing device and an external device via a wireless communications technique

Inventor(s): Kato, Naotaka, Fujisawa, Japan
Kanada, Yoshihisa, Yokohama, Japan
Assignee: International Business Machines Corporation, Armonk, NY, United States (U.S. corporation)
Appl. No.: 98-5962
Filed: 12 Jan 1998

Priority Data

JP 1997-143596 2 Jun 1997

Int. Cl. G06F013-00
Issue U.S. Cl. 709/227.000; 709/217.000; 709/232.000; 709/250.000; 455/556.000
Current U.S. Cl. **709/227.000; 709/217.000; 709/232.000; 709/250.000**; 455/556.000
Field of Search 709/201; 709/202; 709/203; 709/217; 709/219; 709/218; 709/227; 709/230; 709/232; 709/250; 709/300; 709/302; 707/10; 707/104; 455/422; 455/433; 455/435; 455/73; 455/556; 455/557

Reference Cited

PATENT DOCUMENTS

Patent Number	Date	Class	Inventor
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US 5440559	Aug 1995	370/314.000	Gaskill
US 5564070	Oct 1996	455/507.000	Want et al.
US 5781723	Jul 1998	713/200.000	Yee et al.
US 5845282	Dec 1998	707/010.000	Alley et al.
US 5862321	Jan 1999	395/200.300	Lamming et al.

Art Unit - 278
Primary Examiner - Vu, Viet D.
Attorney, Agent or Firm - Ryan & Mason, L.L.P.; Otterstedt, Paul J.

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17 Claim(s), 6 Drawing Figure(s), 5 Drawing Page(s)

ABSTRACT

To provide an improved information processing apparatus and a method for controlling the same, which enables to smoothly transfer data, such as processed results obtained from execution of an application program, an ***HTML*** file acquired from a Web server in accordance with the **TCP /IP protocol** or the like, to an external device (PDA) by using an infrared communication function. The disclosed information processing

apparatus periodically accesses a predetermined server machine (e.g., a Web server) to acquire a d[redacted]red file (e.g., an **HTML** file) [redacted]is file acquisition operation is carried out without the involvement of operations of an infrared transceiver. In other words, the information processing apparatus attempts to continually perform caching of the most recent download data. As a result, when the PDA as an external device is set into an infrared communication mode and a user simply holds the PDA to a station discoverable region of the information processing apparatus, a connection between them is established, thereby enabling the PDA to receive the most recent data.

L24 ANSWER 2 OF 2 USPATFULL
United States Patent Patent Number: 5905248
Date of Patent: 18 May 1999

System and method for carrying out information-related transactions using web documents embodying transaction enabling applets automatically launched and executed in response to reading URL-encoded symbols pointing thereto

Inventor(s): Russell, Garrett, Newark, DE, United States
Wilz, Sr., David M., Sewell, NJ, United States
Knowles, Carl Harry, Morristown, NJ, United States
Assignee: Metrologic Instruments, Inc., Blackwood, NJ, United States (U.S. corporation)
Appl. No.: 97-916694
Filed: 22 Aug 1997

Related U.S. Application Data

Continuation-in-part of Ser. No. US 1997-905903, filed on 4 Aug 1997
Ser. No. Ser. No. US 1997-869164, filed on 4 Jun 1997
Ser. No. Ser. No. US 1997-846219, filed on 25 Apr 1997
Ser. No. Ser. No. US 1997-838501, filed on 7 Apr 1997
Ser. No. Ser. No. US 1996-645331, filed on 24 Sep 1996
Ser. No. Ser. No. US 1996-615054, filed on 12 Mar 1996
Ser. No. Ser. No. US 1995-573949, filed on 18 Dec 1995
Ser. No. Ser. No. US 1994-292237, filed on 17 Aug 1994, now patented, Pat. No.
US 5767499, Pat. No. 5767499
Ser. No. Ser. No. US 1994-365193, filed on 28 Dec 1994, now patented, Pat. No.
US 5557093, Pat. No. 5557093
Ser. No. Ser. No. US 1994-293493, filed on 19 Aug 1994, now patented, Pat. No.
US 5525789, Pat. No. 5525789
Ser. No. Ser. No. US 1995-561479, filed on 20 Nov 1995, now patented, Pat. No.
US 5661292, Pat. No. 5661292
Ser. No. Ser. No. US 1993-278109, filed on 24 Nov 1993, now patented, Pat. No.
US 5484992, Pat. No. 5484992
Ser. No. Ser. No. US 1995-489305, filed on 9 Jun 1995, now abandoned
Ser. No. Ser. No. US 1995-476069, filed on 7 Jun 1995, now patented, Pat. No. US 5591953, Pat. No. 5591953
And Ser. No. US 1996-584135, filed on 11 Jan 1996, now patented, Pat. No. US 5616908, Pat. No. 5616908
which is a continuation of Ser. No. US 1996-651951, filed on 21 May 1996
which is a continuation of Ser. No. US 1995-489305, filed on 9 Jun 1995, now abandoned
which is a continuation of Ser. No. US 1992-821917, filed on 16 Jan 1992, now abandoned
which is a continuation-in-part of Ser. No. US 1990-583421, filed on 17 Sep 1990, now patented, Pat. No. US 5260553, Pat. No. 5260553
And Ser. No. US 1990-580740, filed on 11 Sep 1990, now abandoned

, said Ser. No. US 838501
which is a continuation-in-part of Ser. No. US 1997-82[illegible]0, filed on 19 Mar 1997
which is a continuation-in-part of Ser. No. US 1996-753367, filed on 25 Nov 1996

Int. Cl. G06K007-10
Issue U.S. Cl. 235/462.000; 235/472.000
Current U.S. Cl. 235/462.150; 235/472.010; **709/218.000**
Field of Search 235/380; 235/381; 235/388; 235/388.5; 235/492; 235/462; 235/472; 235/475; 235/470; 235/469

Reference Cited

PATENT DOCUMENTS

Patent Number	Date	Class	Inventor
US 5490217	Feb 1996	380/051.000	Wang et al.
US 5600253	Feb 1997	324/644.000	Cohen et al.
US 5635694	Jun 1997	235/375.000	Tuhro
US 5640193	Jun 1997	348/007.000	Wellner

Art Unit - 286
Primary Examiner - Le, Thien Minh
Attorney, Agent or Firm - Perkowski, Esq., Thomas J.

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22 Claim(s), 19 Drawing Figure(s), 12 Drawing Page(s)

ABSTRACT

A novel transaction-enabling method and system are disclosed, wherein a transaction-enabling **Java**-Applet is embedded within an **HTML** -encoded document stored in an HTTP server at predetermined URL. When a code symbol (e.g., magstripe or bar code) encoded with the URL is read using a code symbol reader interfaced with a **Java**-enabled Internet terminal, the corresponding HTTP document is automatically accessed and displayed at the terminal, and the transaction-enabling **Java**-Applet initiated for execution so that the customer, consumer or **client** desiring the transaction can simply and conveniently conduct the information-related transaction over the Internet. The transaction-enabling Internet terminal can be in the form of an Internet kiosk installed in a public location, in the manner as conventional ATMs. By virtue of the present invention, universal transaction machine (UTMs) can be easily deployed for use by the mass population so that they can easily conduct various types of transaction over the Internet.

Computer resource distributing method and system for distributing a multiplicity of processes to a plurality of computers connected in a network

Inventor(s): Sumimoto, Shinji, Kawasaki, Japan
Assignee: Fujitsu Limited, Kawasaki, Japan (non-U.S. corporation)
Appl. No.: 95-445793
Filed: 23 May 1995

Related U.S. Application Data

Continuation of Ser. No. US 1993-32866, filed on 17 Mar 1993, now abandoned

Priority Data

JP 1992-63771 19 Mar 1992

Int. Cl. G06F007-00
Issue U.S. Cl. 395/650.000; 364/DIG.001; 364/281.800; 364/281.300; 364/280.000
Current U.S. Cl. **709/104.000; 709/226.000**
Field of Search 395/650; 395/700

Reference Cited

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27 Claim(s), 43 Drawing Figure(s), 32 Drawing Page(s)

ABSTRACT

When amounts of processing of processes to be distributed are known, a scheduler in a **client** allots the processes in order of their respective amounts of processing to computers in ascending order respective of cumulative amounts of processing of the computer. The cumulative amount of processing in each computer is updated by adding the amount of processing of the allotted process to the cumulative amount of processing of the computer each time a process is allotted to a computer. Each computer supplies situation
data such as usage, together with reliability thereof to a server which distributes computers, and the server allots usable computers to the ***client*** on the basis of these data. The agent of each usable computer supplies a resource use token to the **client** so as to permit exclusive use of a computer resource.

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AB When amounts of processing of processes to be distributed are known, a scheduler in a **client** allots the processes in order of their respective amounts of processing to computers in ascending order respective of cumulative amounts. . . . as usage, together with reliability thereof to a server which distributes computers, and the server allots usable computers to the **client** on the basis of these data. The agent of each usable computer supplies a resource use token to the **client** so as to permit exclusive use of a computer resource.

SUMM . . . necessary to take the following facts into consideration: (1) that the situations of the CPUs, including a breakdown of a **host** , dynamically change; (2) that a wide variety of computers are connected
to each other; and (3) that there may be. . .

SUMM . . . of the situation data and the reliability data, the server distributes processes to computers or allots usable computers to a **client** which distributes processes. In this case, each computer increases the reliability when the change of the situation is small, and. . .

SUMM . . . and the hardware information of each computer, the server distributes processes to computers resources or allots preselected computers to the **client**. In this way, distribution corresponding to the performance of each computer is enabled, thereby increasing the throughput of the computer. . .

SUMM . . . the exclusive use of a computer resource is provided in a computer. The agent establishes a connection with a predetermined **client** which requests the use of a computer resource, and supplies a computer resource use token to the **client** for the purpose of the exclusive allotment of the computer resource to the **client**. In this way, by allotting a resource by using the resource use token, it is possible to allot a plurality of resources serially and efficiently without a fear of the same resource being allotted to different **clients**.

SUMM . . . the agent compares the situation of a computer resource when the agent has received a processing asking message from a **client** with the situation of the computer resource when the agent supplies a token, and if there is a change in. . . this way, it is possible to efficiently allot a plurality of computer resources whose situation change to a plurality of **clients**.

SUMM Furthermore, in a computer resource distributing method according to the
present invention, when a **client** detects a breaking of the

connection, distribution is carried out except for the computer resource with which the connection has. . .

DRWD FIG. 16 is an explanatory view of a distribution processing **host** table;

DRWD FIG. 19 is an explanatory view of a **host**.process mapping table;

DRWD FIG. 30 shows the processing flow of a **host** situation data controller;

DRWD FIG. 32 shows the structure of a **client**;

DRWD FIG. 36 is an explanatory view of the resource use information for each **client**; and

DETD In FIG. 2, the reference numerals 31 to 36 represent a plurality of computers (**host** A to **host** F) which are connected in a network; 31a to 36a represent local resource managers (LMs) provided in the respective computers so as to monitor the operational states thereof; 31b to 32b represent **clients** (CLTs), each of which requests computers usable for process distribution and executes distribution of processes by using the allotted computers;. . . DM" hereinafter) which holds the data on the operational state of each computer and determines the usable computers when a **client** CLT requests computer resources; and 31d to 36d each represent a resource use permitting mechanism (referred to as "agent or AGT" hereinafter) for supplying a message (token) which permits the exclusive use of a computer resource to the **client** CLT which is designated by the domain resource manager DM.

DETD The computers which are usable for the distribution of processes by a **client** is determined as follows. (See FIG. 2(a).) The local resource managers LMs 31a to 36s of the respective computers transmit. . . DM 32c receives a request for the allotment of computers which are usable for the distribution of processes from the **client** 31b (which corresponds to the scheduler 13 in FIG. 1), the domain resource manager DM 32c determines at least two. . . the reliability of each computer taken into consideration. For example, computers are selected in order of capacity and reliability. The **client** 31b distributes the processes to the usable computers in the manner explained in FIG. 1. In this case, each of. . .

DETD . . . the domain resource manager DM 32c, and the domain resource manager DM 32c allots at least two computers to the **client** 31b on the basis of the situation data, the reliability and the hardware of each computer. In this way, it. . .

DETD In order that the **client** 31b can actually ask the usable computers 33 to 36 to execute the processes, it is necessary to obtain permission. . .

DETD . . . manager DM 32c determines the usable computers 33 to 36 in answer to the request for computer resources from the **client** 31b, the domain resource manager DM 32c instructs the agents 33d to 36d of the respective computers to answer the request for the execution of the processes from the **client** 31b (FIG. 2(a)). Under the instructions of the DM 32c each of the agents 33d to 36d establishes a connection with the **client** 31b which requests the use of computer resources (FIG. 2(b)), and supplies a resource use token to the **client** 31b for the purpose of the exclusive allotment of the computer resource to the **client** 31b. In this way, the **client** 31b can exclusively use the computers which have supplied the tokens. The resource use token includes the data on the. . . the resource, the amount of usable resource, the stability of the resource and the resource usable time limit, and the **client** 31b distributes the processes to the plurality of computers on the basis of these data under the control shown in. . .

DETD When a plurality of **clients** (e.g., 31b and 32b) request the use of computer resources, each agent establishes connection with each

of the **clients** 31b and 32b. Each agent first supplies a resource use token only to one predetermined client (e.g., 31b) so as to allow the **client** 31b the exclusive use of the computer resource and after the end of the use of the computer resource by the **client** 31b, each agent supplies a resource use token to the next **client** (e.g., 32b) so as to allow the **client** 32b the exclusive use of the computer resource. In this way, it is possible to efficiently allot a plurality of. . .

DETD . . . executed, 30 a communication network such as a LAN (Local Area Network), and 31 to 36 a plurality of computers (**host** A to **host** F) connected in the network. In the respective computers 31 to 36, the reference numerals 31a to 36a represent local resource managers (LMs); 31b and 32b represent **clients** (CLTs), each of which requests computer usable for process distribution and executes distribution of processes 11 by using the allotted. . . the data on the operational situation such as the usage of each computer and determines the usable computers when a **client** CLT requests computer resources; and 31d to 36d, represent a resource use permitting mechanism (agent) for supplying a resource use token to the **client** CLT which is designated by the domain resource manager DM so as to permit the exclusive use of the resource. . .

DETD In order that the **client** 31b distribute the group 11 of processes to remote computers and ask them for the execution of the processes, it. . .

DETD If the amounts of processing of the processes 11a to 11n are known, the scheduler 13 in the **client** 31b allots the process having the largest amount of processing to a computer (e.g., 33) which has the smallest cumulative. . .

DETD The computers which are usable for the distribution of processes by a **client** are determined as follows.

DETD . . . 4). When the DM 32c receives a request for computers which are usable for the distribution of processes from the **client** 31b through the local resource manager LM 31a (FIG. 5), the domain resource manager DM 32c determines at least two. . . consideration. For example, computers 33 to 36 are selected in order of capacity and reliability as the usable computers. The **client** 31b distributes the processes to the usable computers 33 to 36 in the manner explained in FIG. 3. For the. . .

DETD In order that the **client** 31b can actually ask the usable computers 33 to 36 to execute the processes, it is necessary to obtain permission. . .

DETD . . . DM 32c determines the usable computers 33 to 36, in answer to the request for a computer resource from the **client** 31b, the DM 32c instructs the agents 33d to 36d of the respective computers to answer the request for the execution of the processes from the **client** 31b through the respective local managers LMs (FIG. 6). Under the instructions of the DM 32c, each of the agents 33d to 36d establishes a connection with the **client** 31b which requests the use of computer resources (FIG. 7), and supplies a resource use token to the **client** 31b for the purpose of the exclusive allotment of the computer resource to the **client** 31b. The resource use token includes the situation data of the resource, the amount of usable resource, the stability of the resource and the resource usable time limit, and the **client** 31b distributes the processes to the plurality of computers on the basis of these data in the manner shown in. . .

DETD When a plurality of **clients** (e.g., 31b and 32b) request the use of computer resources, each of the agents 33d to 36d establishes a connection with each of the **clients** 31b and 32b. Each agent first supplies a resource use token only to one predetermined **client** (e.g., 31b) so as to allow the **client** 31b the exclusive use of the computer resource and after the end of the use of the computer resource by the **client** 31b, each agent supplies a resource use token to the next **client** (e.g., 32b) so as to

allow the **client** 32b the exclusive use of the computer resource.

DETD . . . process allotting device (scheduler) for allotting a plurality of processes to a plurality of computers, which is included in the **client** 31b shown in FIG. 3; and 30 a group of computers. In the group 11 of processes, the reference numerals. . .

DETD . . . 9, the reference numeral 10 represents a network such as a LAN,

and 31 to 35 computers (referred to as "**host** 1 to **host** 5" hereinafter) which are connected in the network and are operated on UNIX. The CPU speed of each of the. . . of each of the hosts 4 and 5 is 200% (normalized as "2"). A scheduler 13 is mounted on one **host** (e.g., **host** 4) among these hosts. It is assumed that the computers 31 to 35 are already permitted to be used for. . .

DETD In FIG. 10, the reference numerals 31 to 35 represent computers (**host** 1 to **host** 5) 13 a scheduler 21 a procedure file in which the compiling procedure for a program is written; 22 an. . . per unit time of the processes which have been executed as the execution

record data; 23 computer information (distribution processing **host** information) including the CPU speed V.sub.cpu and the load .eta. which are input from a **host** to the scheduler 13; and 24 process information including the names and the sizes of the files to be

processed. The scheduler 13 allots the processes to the **host** 1 to **host** 5 in accordance with the compiling command with reference to the procedure file 21, the execution record data file 22 and the distribution processing **host** information 23, and commands the hosts to start compiling processings in parallel with each other.

DETD . . . process table for storing the data on the procedure for each process and the amount of processing thereof; 13d a **host** information controller for controlling the distribution processing **host** information (CPU speed, CPU usage, etc.) 23 supplied from each of the hosts 1 to 5; and 13e a distribution processing **host** table (which corresponds to the process allotting computer table 13e in FIG. 8) for storing the **host** information such as the CPU speed (processing speeds) V.sub.cpu and the current CPU load n (usage) of each

of the hosts 1 to 5, the **host** information being updated by the **host** information controller 13d. The reference numerals 13f represents a process allotting rule table, and 13j a later-described resource requesting portion. . .

DETD . . . of the data supplied from each of the tables 13c and 13e in accordance with a predetermined algorithm; 13h a **host**.process mapping table (which corresponds to the computer.process table 13h in FIG. 8) for storing the correspondence of the computers to. . .

DETD Step 4: In parallel with the steps 1 to 3, the **host** information controller 13d periodically updates the contents of the distribution processing **host** table 13e. The contents of the current distribution processing **host** table 13e are shown in FIG. 16. The distribution processing **host** table 13e is composed of a **host** number column 13e-1, a **host** name column 13e-2, a user column 13e-3, a CPU usage column 13e-4, a CPU load column 13e-5 and a CPU speed column 13e-6. In FIG. 16, the CPU usage of the **host** 4 is 30%, and the CPU usages of the other hosts are 0%.

DETD . . . 13g allots the processes to the hosts by using the data of the process table 13c and the distribution processing **host** table 13e. In the pipeline processing of the command (10), the processes are separated at each stage before distribution.

DETD The process allotting portion 13g obtains the **host** having the smallest cumulative amount of processing with reference to a cumulative processing amount table FIGS. 18(a)-(d), and the process (Seq 2) having the largest amount of processing (the process Seq 2) is allotted to this

host. Since the cumulative amount of processing of each **host** at the init[redacted] time is 0, the process Seq 2 [redacted] allotted not on the basis of the amount of processing but to the **host** having the highest CPU speed and the smallest CPU load. In other words, the effective CPU speed of each **host** is obtained from the formula (b), and the process Seq 2 is allotted to the **host** having the highest effective CPU speed. In this case, since the effective CPU speeds of the hosts 1 to 5 are "1", "1", "1", "1.4" and "2", respectively, the process Seq 2 is allotted to the **host** 5 (step 5b).

DETD Thereafter, the cumulative amount of processing of the **host** 5 is updated. The value 100 KB obtained by dividing the file size 200 KB by the effective CPU speed. . .

DETD . . . in the negative, the process (Seq 4) having the second largest amount of processing is similarly allotted to a predetermined **host**. That is, the process Seq 4 is allotted to the **host** 4 having the highest effective CPU speed of the hosts 1 to 4, and the cumulative amount of processing of the **host** 4 is updated (FIG. 18 (c)).

DETD Finally, the process Seq 6 is allotted to the **host** having the smallest amount of processing. If two or more hosts have the smallest amount of processing, the **host** having the highest effective CPU speed is selected. In this case, although the hosts 1, 3 and 5 have the smallest amount of processing, since the effective CPU speed of the **host** 5 is the highest, the process Seq 6 is allotted to the **host** 5, thereby ending the allotment processing.

DETD Step 6: If the allotment processing is finished at step 5, the **host**.process mapping table 13h which shows the correspondence of the hosts to the processes is created as shown in FIG. 19.

DETD Step 7: When the creation of the **host**.process mapping table 13h is finished, the processing starting and execution monitoring portion 13i instructs the corresponding hosts to execute the. . . of the processes Seq 1 to Seq 5 are finished, the processing starting and execution monitoring portion 13i instructs the **host** 5 to execute the process Seq 6.

DETD . . . actual processing. The time elapsed from the time when the processing starting and execution monitoring portion 13i instructed to the **host** to start processing to the time when the **host** reports the end of the processing is monitored as the processing time. The processing starting and execution monitoring portion 13i. . . seconds, and the execution of the process Seq 4 has taken 9 seconds, since the effective CPU speed of the **host** 3 which executes the process Seq 1 is 1, 10 seconds (T: 10) is the execution record of the process Seq 1. Since the effective CPU speed of the **host** 5 which executes the process Seq 2 is 2, 22 (=11.times.2) seconds is the execution record of the process Seq 2. Since the effective CPU speed of the **host** 4 which executes the process Seq 4 is 1.4, 12.6 (=1.4.times.9) seconds is the execution record of the process Seq. .

DETD . . . (FIG. 3). The reference numeral 41 represents a resource information fetching portion for periodically fetching the situation data of a **host**, namely, the usage of a resource (CPU, memory, disk). The situation of a **host** will be represented by the CPU usage n in the following explanation. The reference numeral 42 represents a load situation. . .

DETD The probability Pd of a breakdown of the **host** is calculated in accordance with the statistical information. For example, the number of times a **host** broke down during a predetermined measuring time is obtained and the number of times is divided by the number of. . .

DETD . . . manager DM under the instruction of the control unit 45. The data to be transmitted are the name of the **host**, the usage .eta., the stability Sa of the **host**, the probability Pd of a breakdown of the **host**, the remaining service time Ts, the short-term and long-term prediction data, the data valid time Te

(actually 1 second is. . .

DETD . . . contr[redacted]er for transmitting and receiv[redacted] a message to and from

the domain resource manager DM, an agent AGT and a **client** CLT, and 49 a packet driven unit for processing a message (packet). When the packet driven unit 49 receives a. . . and supplies it to the domain resource manager (steps 49c and 49c'). If the message is a request to an

client, the packet driven unit 49 assembles a message packet and supplies it to the **client** (steps 49d and 49d').

DETD The control unit 45 then calculates the probability of a breakdown of the **host** and the remaining service time of the **host**, etc. (step 45e). Thereafter, the control unit 45 judges whether or not the situation data transmitting time T.sub.0 has come. . . answer is in the negative, the control unit 45 judges whether or not the probability of a breakdown of the **host** is not less than 10% (step 45g). If the probability is less than 10%, the process returns to the start. . .

DETD . . . other hand, if the situation data transmitting time To has come, or if the probability of a breakdown of a **host** is not less than 10%, the control unit 45 transmits the situation data (usage), the stability, the data valid time. . .

DETD . . . if the CPU usage exceeds a preset value, e.g., 80%, and it is impossible to execute a process under a **remote control** of another computer, the situation data is not transmitted. In this case, the domain resource manager DM directly inquires of. . .

DETD While a computer is executing a process under a **remote control**, in answer to the request from a **client**, the situation data is not transmitted, and after the end of the processing, the situation data is transmitted. If the situation data is transmitted during the execution of a process under **remote control** , the usage obtained by subtracting the usage for the remote processing from the total usage is set as the true. . .

DETD . . . collects and controls the situation data of each computer and determines usable computers in answer to a request from a **client** .

DETD The reference numeral 51 represents a **host** situation data storage unit for storing the **host** situation data supplied from the local resource manager LM of each computer, 52 a **host** situation data controller for controlling the contents of the **host** situation data storage unit 51, and 53 a resource use information storage unit for receiving the data on the resource use situation of a **client** from an agent AGT (FIG. 3) and storing the data. The resource use information includes the name of the **client host**, the name of the resource used, the amount of resource used, and the time during which the resource is used.. .

. represents a resource use information controller and 55 a resource allotment scheduler for determining computers which are usable by a **client** with the **host** situation and the resource use information of the **client** taken into consideration in answer to a request from the **client**. The reference numeral 56 represents a communication controller for receiving and supplying a message to and from the local resource. . .

DETD The message to be received includes a **host** situation message MS1 (FIG. 24) supplied from a local resource manager LM, a resource use information message MS2 supplied from an agent AGT, and a resource use requesting message MS3 supplied from a **client** CLT. The resource use requesting message MS3 includes the address, the request for allotment, the type of resource (e.g., CPU), the necessary amount (number of CPUs), the **host** name, and the name of the connection port, as shown in FIG. 28(a).

DETD . . . LM through the communication controller 56, the packet driven unit 57 analyzes the message. If the message received is the

host situation message MS1, the packet driven unit 57 transmits the massage to the **host** situation data controller 52, and the **host** situation data controller 52 stores the **host** situation data in the **host** situation storage unit 51 (step 50a). If the message received is the resource use information message MS2 supplied from an. . . the resource use information controller 54,

and the resource use information controller 54 registers the resource use information of each **client** in the resource use information storage unit 53 (step 50b). If the message received is the resource use requesting message MS3 supplied from a **client** CLT, the packet driven unit 57 transmits the message to the resource allotment scheduler

55. The resource allotment scheduler 55 determines usable computers with

reference to the **host** situation and the resource use information of the **client**, and supplies a connection requesting message MS4 to the agents AGT of the computers (step 50c. The

connection requesting message MS4 includes the address, the request for AGT connection, the type of resource, the **host** name, and the number of the connection port, as shown in FIG. 28(b).

DETD Processing of **Host** Situation Data Controller

DETD FIG. 30 shows the processing flow of a **host** situation data controller. In FIG. 30, the situation of only one **host** will be explained.

DETD When the **host** situation data controller 52 receives the **host** situation message MS1 from the packet driven unit 57, the **host** situation data controller 52 stores the **host** situation data (FIG. 24) in correspondence with the **host** name in the **host** situation data storage unit 51 (steps 52a, 52b). The **host** situation data controller 52 then decreases the data valid time Te included in the **host** situation data at a predetermined interval of time (step 52c) and judges whether or not the data valid time Te reaches 0 (step 52d). If Te is not 0, the process returns to step 52a, and if the **host** situation message is not received, the data valid time Te is decreased.

DETD If a new **host** situation message MS1 is received before Te becomes 0, the current **host** situation data is replaced by the newly received **host** situation data, and the above processing is repeated. If the computer normally works, a new **host** situation data is supplied from the local resource manager LM.

DETD . . . considered to be out of order and the computer is excepted from

the objects of distribution. That is, when a **client** requests the use of a computer, this computer is not allotted (step 52e).

DETD . . . usage (step 55c), the usable computer is determined with the stability, CPU speed, the probability of the breakdown of a **host**, the predicted value of the future usage and the remaining service time

taken into consideration (step 55e). For example, an. . . determined so that the higher the stability and the CPU speed, the smaller the probability of the breakdown of a **host** and the predicted value of the future usage and the longer the remaining service time, the larger the evaluation function. . .

DETD . . . the resource allotment scheduler 55 judges whether or not the same number of computers as the number required by the **client** have been determined (step 55f). If the answer is "NO" the process returns to the step 55b and a similar. . .

DETD When a plurality of **clients** simultaneously request the use of computers, the resource allotment scheduler 55 determines the computer allotment schedule on the basis of the resource use information of each **client**, and allots the computer resources to the **clients**

.

DETD (e) Control of Resource Use Requesting Messages from **Clients**

DETD Structure of **Client**

DETD FIG. 32 shows [redacted] structure of a **client**. The sa[redacted] numerals are provided for the elements which are the same as those in FIG. 11. In FIG. 32,. . . 24; 13c, a process table for storing the data on each process and the amount of processing thereof; 13e, a **host** information storage unit for storing the **host** information (usage, stability, hardware information, etc.) included in the resource use token which is supplied from a usable computer; 13g,. . . the resource requesting message MS3 (FIG. 28(a) in accordance with the processing command; and 13m, a communication controller having a **connection** breaking detecting mechanism 13n for detecting a breaking of the **connection established** between the communication controller and agents. The reference numeral 13p represents a resource use information storage unit for storing the name of the **host** which is utilized for the distribution of the processes, the port number, the name of the resource used, the amount. . .

DETD Operation of **Client**

DETD . . . of the agents AGT of the computers which received the connection requesting message MS4 (1) establishes a connection with the **client** CLT, (2) and then supplies a computer resource use token which allows the exclusive use of the computer resource to the **client**. The computer resource use token includes, for example, the token ID, situation of the resource, the amount of usable resource,. . .

DETD When the packet driven unit 13a receives a resource use token from an agent AGT, it stores the **host** information included in the token in the **host** information storage unit 13e and updates the resource use information stored therein in correspondence with the agent AGT. The packet. . .

DETD When the packet driven unit 13a receives a resource use end message from an agent AGT, it deletes the **host** information in the **host** information storage unit 13e which corresponds to the agent AGT.

DETD . . . of the connection as the breakdown of the computer or rejection of forced use of the computer, and deletes the **host** information in the **host** information storage unit 13e which corresponds to the agent AGT with which the connection has been cut. Thereafter, the resource. . .

DETD In order that a **client** CLT can actually ask the usable computers which are determined by the domain resource manager DM to execute the processes,. . .

DETD . . . the resource, etc., and 62 represents a resource use information storage unit for storing the resource use information of each **client**. The resource use information of each **client** includes the name of the **host** of a **client**, the number of the connection port, the user, the resource used, the amount of resource used, the time during which. .

DETD The reference numeral 63 represents a resource situation controller for registering the resource situation (**host** situation) of the **host** of the agent in the resource use situation storage unit 61, 64 represents a resource scheduler for executing the control of the allotment of a resource, the **establishment** of a **connection** and the transmission of a resource use token (FIG. 34) with respect to a plurality of **clients**; 65 represents a resource use token storage unit; 66 represents a communication controller; 67 represents a resource use controller for checking the token and controlling the execution of the processing command supplied from a **client**; 68 represents a packet driven unit; and 69 represents a **connection** controller for controlling the

establishment/breaking of a **connection** with a **client** CLT.

DETD . . . domain resource manager DM determines usable computers in answer to the request for the use of a resource from a **client**, as described above, and transmits the **connection** requesting message MS4 (FIG. 28(b)) to the agents of the usable computers. When the packet driven unit 68 of each. . . through the communication controller 66, the packet driven unit 68 transmits the message to the resource scheduler 64 and the **connection** controller 69. The **connection** controller 69 **establishes** a **connection** with the **client** CLT by using the **host** name and the port number which are designated in the **connection** requesting message MS4 in accordance with the **TCP/IP protocol** in the UNIX.

DETD The resource scheduler 64 then determines the **client** to which the resource is allotted on the basis of the resource situation (the situation of its own computer) and the resource use information of each **client**, creates a resource use token and supplies the token to the **client**. At this time, the resource scheduler 64 stores the contents of the resource use token in the resource use token. . . token ID. The resource scheduler 64 also updates the contents of the resource use information storage unit 62 for the **client**.

DETD When a plurality of **clients** require a resource, the resource scheduler 64 supplies a resource use token so that the resource is allotted to the **clients** in an ascending order of amount of resource used and the time during which the resource is used on the basis of the resource use situation of the **client**, so that the resource is allotted to the **clients** in turn in a round robin, or so that the **clients** are alternately permitted to use the resource. Therefore, even if a plurality of **clients** simultaneously require a resource, the agent AGT supplies a resource use token to one **client** while keeping the other **clients** waiting.

DETD When a **client** receives the resource use token, the processes are distributed to the usable computers and a resource use message (processing asking. . .

DETD . . . and the time at which the resource use message MS5 is received is large, the resource scheduler 64 informs the **client** CLT that the resource use message MS5 is cancelled, and supplies a new resource use token. Alternatively, the resource scheduler 64 transmits a message to the **client** CLT stating that the processing will be delayed, thereby delaying the use of the resource until the resource becomes available.

DETD . . . use controller 67 extracts and executes a sequence of processing commands, and supplies the result of the execution to the **client**. In this case, the connection controller 69 establishes a connection with the **client** CLT so as to output the result of the execution of the sequence of processing commands and the like.

DETD . . . 67 nullifies the supplied resource use token and instructs the resource scheduler 64 to supply a token to the next **client**. When the resource usable time limit designated by the token has elapsed, when the **client** does not use the computer for a predetermined time, or when the resource use controller 67 has received a token return message from the **client**, the resource use controller 67 cuts the connection and instructs the resource scheduler 64 to supply a token to the next **client**.

DETD When the packet driven unit 68 is requested to supply the resource use information of a **client** by the domain resource manager DM, the packet driven unit 68 transmits the request to the resource scheduler

64. The resource scheduler 64 then transmits a message indicating the resource use information of the **client** to the domain resource manager DM.

DETD In the above embodiments, the domain resource manager DM determines usable computers in answer to the request from a **client** CLT. Alternatively, the domain resource manager DM may have the function of a **client** so as to collect and control the situation data of each computer and distribute resources to the computers.

CLM What is claimed is:

8. A computer resource distributing method for allotting a plurality of computers connected in a network to a **client** which requires selected computers of said plurality of computers to perform processes under control of a server, said method comprising. . . data from each respective computer of said plurality of computers, to the server which allots the selected computers to the **client** to perform processes; and allotting, by said server, the selected computers of said plurality of computers to said **client** on the basis of said first and second data.

. . . second data are received by a respective computer; and excepting the respective computer from the objects of allotment to the **client** if the valid time of the respective computer is a selected value.

. . . said server together with said first and second data; and allotting some computers of said plurality of computers to said **client**, by said server, based on said respective first data, said respective second data and said respective processing speed.

. . . steps of: supplying said first and second data, which have been prepared, of the computers which are allotted to said **client**, from said plurality of computers to the **client**; and distributing said processes to said allotted computers with reference to said first and second data.

15. A computer resource distributing method for allotting a plurality of computers connected in a network to a **client** which requires some of said plurality of computers for performing processes under control of a server, said method comprises the. . . each agent supplying a message for permitting exclusive use of a respective computer of the plurality of computers, to the **client** and each local resource manager monitoring a respective utilization rate of said respective computer; monitoring the respective utilization rate of. . . manager to said server; requesting, to the server, use of the plurality of computers for performing said processes by the **client**; determining, using said server, which computers of the plurality of computers are to be allotted to the **client** based on the respective utilization rate of each computer of said plurality of computers when said **client** requests use of any of said plurality of computers; establishing a connection with said **client**, by each of said agents, of said allotted computers; supplying said message from each said agent of said allotted computers to said **client**, so as to permit exclusive use of the computer said **client** requests use of; and distributing, by said **client**, said processes to said allotted computers.

. . . resource distributing method according to claim 15, further comprising the steps of: determining the computers to be allotted for each **client** when a plurality of **clients** request the use of any of said plurality of computers; establishing a connection

with each respective **client** of the **clients** by each of said agents [redacted] said computers allotted to sai[redacted]**lient**; supplying said message to one predetermined **clie**[redacted] from said agents of said allotted computers so as to permit exclusive use of said computer; and supplying said message from each of said agents to another **client** to which said each of said agent is allotted so as to permit exclusive use of said computer when said predetermined **client** completes use of the requested computer of said plurality of computers.

17. A computer resource distributing method according to claim 15, wherein said distributing step by the **client** include: arranging said processes in order of respective estimated amounts of processing; monitoring respective cumulative amounts of processing of each. . . . . of: storing the utilization rate added to said message in a memory of said agents; sending a message, from said **client** to said agents, requesting processing of at least one of said distributed processes; comparing a respective current utilization rate of. . . . . of: storing the utilization rate added to said message in a memory of said agents; sending a message, from said **client** to said agents, requesting processing of at least one of said distributed processes; comparing a respective current utilization rate of. . . agents received said message requesting processing with said stored utilization rate; and transmitting a message from said agent to said **client** indicating said processing will be delayed until the respective computer becomes available when there is a specified change in said. . .

21. A computer resource distributing method according to claim 19, further comprising the steps of: notifying said **client** that said agent will not perform the distributed processes, when a specified change in said utilization rate of the respective. . . a new message including the respective current utilization rate of the respective computer as a new utilization rate to said **client**, from said agent, to permit exclusive use of said respective computer; and distributing said processes to said allotted computers based on the new utilization rate, by said **client**.

22. A computer resource distributing method according to claim 15, further comprising the steps of: providing, in said **client**, a mechanism for detecting a breaking of said connection to said agent; detecting a breaking of the connection to a. . . said allotted computers except to the computer corresponding to said agent which detects the breaking of the connection with said **client**.

. . . system for distributing a multiplicity of processes to a plurality of computers connected in a network, said system comprising: a **client** for requesting the use of a plurality of computers to perform a multiplicity of processes; a server for allotting the computers to said **client** based on utilization rates, each of said plurality of computers having a respective utilization rate, when said **client** requests the use of the plurality of computers; a resource manager, provided in each of said plurality of computers, which. . . provided in each of the allotted computers, which transmits a message permitting exclusive use of the respective computer, to said **client**, said agent of a computer being allotted to said **client** supplying said message to said **client** and, thereafter, said **client** distributing said processes to said allotted computers.

25. A computer resource distributing system according to claim 24, wherein: said resource manager transmits data indicative of a reliability. . . . given period of time is small and decreasing when said variation is large; and said server allots computers to the **client** based on said utilization rate and said data.

26. A computer resource distributing system according to claim 24, wherein said **client**: arranges said processes in order of amount of processing; monitors each respective cumulative amount of processing corresponding to each of. . .

NCL NCLM: **709/104.000**
NCLS: **709/226.000**

(FILE 'HOME' ENTERED AT 15:11:50 ON 20 JUL 2000)

FILE 'USPATFULL' ENTERED AT 15:12:00 ON 20 JUL 2000

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L1          6696 S (713/?)/NCL
L2          8531 S (709/?)/NCL
L3           829 S "TCP/IP" PROTOCOL
L4         36036 S REMOT? CONTROL?
L5             2 S ADVERTIS? PUBLISHER
L6             3 S AD PUBLISHER#
L7             5 S L5 OR L6
L8         14582 S L1 OR L2
L9             2 S L3 (P) L4
L10           36 S L3 AND L4 AND L8
L11           25 S L10 AND HOST
L12           22 S L11 AND CLIENT#
L13           14 S L12 AND ADVERTIS?
L14           14 S L13 AND (AVAILABILITY OR CAPACITY)
L15            0 S L14 AND JAVA
L16            0 S L14 AND HTML
L17          131 S ESTABLISH? (P)CONNECT? (P) CLIENT# (P) HOST
L18          195 S URL ADDRESS?
L19            1 S L17 AND L18 AND JAVA AND HTML
L20            3 S L10 AND JAVA
L21            6 S L10 AND HTML
L22            7 S L20 OR L21
L23            2 S L22 AND HOST
L24            2 S L23 AND CLIENT#
L25           22 S L10 AND HOST AND CLIENT#
L26            2 S L25 AND URL
L27            1 S L25 AND L17
L28        53742 S AD OR ADVERTIS?
L29        17055 S AD PUBLISHER# OR ADVERTIS?
L30           14 S L25 AND L29
L31            0 S L30 AND JAVA
L32            0 S L30 AND HTML
L33            2 S L25 AND HTML
L34            1 S L25 AND JAVA
L35            2 S L33 OR L34
L36            6 S L10 AND HTML
L37            3 S L10 AND JAVA
L38            7 S L36 OR L37
L39            5 S L38 NOT L35
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=> D 1-5 FP

L39 ANSWER 1 OF 5 USPATFULL
United States Patent Patent Number: 6061738
Date of Patent: 9 May 2000

Method and system for accessing information on a network using message aliasing
functions having shadow callback functions

Inventor(s): Osaku, Teizo, Kawaguchi, Japan
Pan, Rong, Niiza, Japan
Assignee: D&I Systems, Inc., Tokyo, Japan (non-U.S. corporation)

Appl. No.: 97-959371
Filed: 28 Oct 1

Related U.S. Application Data

Continuation-in-part of Ser. No. US 1997-883148, filed on 27 Jun 1997, now abandoned

Int. Cl. G06F015-16
Issue U.S. Cl. 709/245.000; 709/219.000
Current U.S. Cl. **709/245.000; 709/219.000**
Field of Search 709/245; 709/219; 709/225; 709/203; 709/227; 709/250

Reference Cited

PATENT DOCUMENTS

Patent Number	Date	Class	Inventor
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US 5404393	Apr 1995	379/096.000	Remillard
US 5740230	Apr 1998	379/088.000	Vaudreuil
US 5761280	Jun 1998	379/093.270	Noonen et al.
US 5764906	Jun 1998	709/219.000	Edelstein et al.
US 5764910	Jun 1998	395/200.530	Shachar
US 5804803	Sep 1998	235/375.000	Cragun et al.
US 5812776	Sep 1998	709/217.000	Gifford
US 5838458	Nov 1998	358/402.000	Tsai
US 5875296	Feb 1999	395/188.010	Shi et al.
US 5930801	Jul 1999	707/103.000	Falkenhainer et al.
WO 9728553	Aug 1997	H01J013-00	
WO 9737319	Oct 1997	G06K007-10	

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"Best Web Browser", PC World, vol. 14, No. 8, p. 136, 138, 139, 142, 146, 148 Aug. 1996.

Art Unit - 278
Primary Examiner - Maung, Zarni
Attorney, Agent or Firm - Law Office of Albert J. Dalhuisen

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7 Claim(s), 27 Drawing Figure(s), 25 Drawing Page(s)

ABSTRACT

The present invention provides methods and systems for accessing a network URL through a pre-assigned simplified network address, correlating to the URL, and for displaying the home page having the URL as its address. These methods and systems provide easier URL and home page access because persons wanting to access the home page need only input the simplified network address, thereby avoiding the need to know and input the URL character string. The simplified network addresses of the present invention include numbers. Methods are provided for selecting numbers for assignment to URLs. The URL and home page access and display methods of the present invention include: assigning a simplified network address such as a number to a URL, storing the URL and number conversion in a network accessible storage system, inputting the assigned number in a network accessible computer, communicating the inputted number to the storage system, converting the number to the URL, retrieving the

home page corresponding to the URL and displaying the home page on the computer. Additionally, the invention provides methods for use in message passing operating systems wherein system level messages to specific objects are
intercepted, creating an alias message.

L39 ANSWER 2 OF 5 USPATFULL
United States Patent Patent Number: 6044403
Date of Patent: 28 Mar 2000

Network server platform for internet, **JAVA** server and video application server

Inventor(s): Gerszberg, Irwin, Kendall Park, NJ, United States
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Appl. No.: 97-1354
Filed: 31 Dec 1997

Int. Cl. G06F013-00
Issue U.S. Cl. 709/225.000; 709/217.000; 709/223.000; 709/238.000
Current U.S. Cl. **709/225.000; 709/217.000; 709/223.000; 709/238.000**
Field of Search 709/201; 709/202; 709/203; 709/217; 709/219; 709/223; 709/224; 709/225; 709/227; 709/229; 709/238; 709/300; 709/250

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US 5014267	May 1991		Tompkins et al.
US 5157717	Oct 1992		Hitchcock
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US 5740231	Apr 1998	379/088.220	Cohn et al.
US 5761662	Jun 1[redacted]	707/010.000	Dasan
US 5796952	Aug 1998	709/224.000	Davis et al.
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Art Unit - 278
Primary Examiner - Vu, Viet D.

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14 Claim(s), 21 Drawing Figure(s), 21 Drawing Page(s)

ABSTRACT

A new architecture capable of utilizing the existing twisted pair interface between the customer services equipment and the local office is used to provide
a vast array of new services to customers. Using an intelligent services director (ISD) at the customer services equipment and a facilities management platform (FMP) at the local office, new services such as simultaneous, multiple
calls (voice analog or digital), facsimile, Internet traffic and other data can
be transmitted over the existing single twisted pair using xDSL transmission schemes. New services such as the implementation of Internet connectivity, videophone, utility metering, broadcasting, multicasting, bill viewing, information pushing in response to a user profile, directory look-up and other services can be implemented via a network server platform via this architecture. A network server platform for hosting a plurality of services comprises, for example, a memory for storing a user profile, the user profile containing interests of a user, and for storing information related to their interests and a controller for controlling the collection of information from information servers and for pushing the collected information to the user in accordance with their defined priority.

L39 ANSWER 3 OF 5 USPATFULL
United States Patent
Patent Number: 6032162
Date of Patent: 29 Feb 2000

System for processing and storing internet bookmark address links

Inventor(s): Burke, Alexander James, 3 Glenside Ter., Upper Montclair, NJ, United States 07043
Appl. No.: 98-4409
Filed: 8 Jan 1998

Int. Cl. G06F013-00
Issue U.S. Cl. 707/501.000; 709/206.000

Current U.S. Cl. 707/501.000; **709/206.000**
Field of Search ..... 707/501; 707/513; 709/203; 709/2[redacted] 709/206; 345/335; 345/348-351; 345/356; 345/357

Reference Cited

PATENT DOCUMENTS

Patent Number	Date	Class	Inventor
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US 5617565	Apr 1997	395/604.000	Augenbraun et al.
US 5636216	Jun 1997	370/402.000	Fox et al.
US 5701451	Dec 1997	395/600.000	Rogers et al.
US 5710883	Jan 1998	395/200.170	Hong et al.
US 5796393	Aug 1998	345/329.000	Macnaughton et al.
US 5848410	Dec 1998	707/004.000	Walls et al.
US 5867667	Feb 1999	395/200.790	Butman et al.
US 5895471	Apr 1999	707/104.000	King et al.
WO 9631826	Oct 1996	G06F013-00	
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Art Unit - 276
Primary Examiner - Feild, Joseph H.
Assistant Examiner - Bourque, R

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28 Claim(s), 5 Drawing Figure(s), 5 Drawing Page(s)

ABSTRACT

A system supports uplo[redacted]ng, downloading, collating and [redacted]orage of bookmark addresses (Universal Resource Locator codes--URLs) using a remote Internet site. A method for accessing Internet data using a remotely stored Internet address or bookmark (URL address code) at a User site involves initiating Internet communication with a remote Internet site and receiving User identification information for obtaining access to a stored bookmark. At least one bookmark stored at the remote Internet site is selected and transfer of data is initiated from an Internet data source at the selected bookmark address. The remote Internet site receives User identification information and bookmarks via Internet communication, stores the bookmarks in a file identifiable with the User Identification information and downloads the stored bookmarks in response to a request via Internet communication.

L39 ANSWER 4 OF 5 USPATFULL

United States Patent

Patent Number: 5982445
Date of Patent: 9 Nov 1999

Hypertext markup language protocol for television display and control

Inventor(s): Eyer, Mark K., San Diego, CA, United States
Field, Michael, San Diego, CA, United States
Assignee: General Instrument Corporation, Horsham, PA, United States (U.S. corporation)

Appl. No.: 96-734681
Filed: 21 Oct 1996

Int. Cl. H04N005-50
Issue U.S. Cl. 348/461.000; 348/460.000; 348/007.000; 395/200.480
Current U.S. Cl. 348/461.000; 348/007.000; 348/460.000; **709/218.000**
Field of Search 345/327; 348/6; 348/7; 348/10; 348/12; 348/13; 348/906; 348/552-553; 348/563; 348/460; 348/554; 348/564; 348/461; 348/465; 455/5.1; 455/6.1; 455/6.2; 455/6.3; 455/4.2

Reference Cited

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Patent Number	Date	Class	Inventor
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US 5734835	Mar 1998	395/200.790	Selker
US 5740252	Apr 1998	380/049.000	Minor et al.
US 5740430	Apr 1998	707/200.000	Rosenberg et al.
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US 5790426	Aug 1998	705/006.000	Robinson
US 5790793	Aug 1998	392/200.480	Higley
US 5793972	Aug 1998	395/200.490	Shane
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Art Unit - 274
Primary Examiner - Peng, John K.
Assistant Examiner - Chu, Dinh Cao Peter
Attorney, Agent or Firm - Lipsitz, Barry R.; Hoppin, Ralph F.

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30 Claim(s), 5 Drawing Figure(s), 5 Drawing Page(s)

ABSTRACT

Textual and graphical displays are provided on a television screen using a hypertext markup language (**HTML**). On-screen display devices allow a user to invoke hyperlinks to different pages of **HTML**-coded data in addition to functions calls for controlling television and non-television appliance functions. A method provides **HTML**-coded display data which is processed to provide a signal suitable for reproduction on a television. The display data may provide information on a featured movie or other presentation of an associated video programming service signal such as a network television broadcast. Function calls allow the control of various television functions and programming options, such as the purchase of pay-per-view programming, or television display options such as aspect ratio, channel, brightness, picture-in-picture, or split-screen. Non-television appliances which may be controlled with function calls include audio equipment which is associated with the programming service (e.g., surround sound, filtering) in addition to, for instance, a home heating and air conditioning system or other household appliances. The invention allows a designer to adapt the vast **HTML** resources of the Internet for use in the television environment for entertainment, educational or informational purposes.

L39 ANSWER 5 OF 5 USPATFULL
United States Patent
Patent Number: 5909551
Date of Patent: 1 Jun 1999

Interactive recording/reproducing medium and reproducing system

Inventor(s): Tahara, Mika, Yokohama, Japan
Takeuchi, Takashi, Fujisawa, Japan
Oda, Toshiyuki, Yokohama, Japan
Assignee: Hitachi, Ltd., Tokyo, Japan (non-U.S. corporation)
Appl. No.: 96-694661
Filed: 9 Aug 1996

Priority Data

JP 1995-217002 25 Aug 1995

JP 1995-340354 27 Dec 1995

Int. Cl. G03G007-00
Issue U.S. Cl. 395/200.610; 395/200.320; 360/027.000; 360/039.000
Current U.S. Cl. **709/231.000**; 360/027.000; 360/039.000
Field of Search 395/497.01; 395/200.61; 395/200.32; 395/200.68; 360/27; 360/39; 358/462; 707/100; 707/102; 707/104; 707/513

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Patent Number	Date	Class	Inventor
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Art Unit - 274
Primary Examiner - Peeso, Thomas
Attorney, Agent or Firm - Antonelli, Terry, Stout & Kraus, LLP

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29 Claim(s), 32 Drawing Figure(s), 24 Drawing Page(s)

ABSTRACT

An interactive recording/reproducing medium including: image data; image reproduction control data which defines an operation instruction received from operation input apparatus and a reproduction procedure for the image data in correlation with each other, the operation input apparatus performing a reproducing operation for the image data in an interactive manner; image related data related to the contents of the image data; and relation defining information which defines the relation between the image related data and the image data. More particularly, an interactive recording/reproducing system which is interactively responsive to operations made by a user, which defines information such as text data (e.g., ASCII text) in association with an image and reproduces the text data simultaneously with reproduction of the image. An optical disk medium comprises a Video-CD recording area for recording image data (e.g. dynamic images, static images, voice) which conform to a basic Video-CD standard, a PC data recording area for recording text data associated with the image data, and a reproduction application recording area for recording a program to effect reproduction using a PC (personal computer). A Video-CD reproducing system and a PC can be alternatively used to perform reproduction using a content of the optical disk medium.

L41 ANSWER 9 OF 14 USPATFULL
United States Patent

Patent Number: 5568612
Date of Patent: 22 Oct 1996

Method and apparatus for **advertising** services of two network servers from a single network node

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Wadsworth, Robert D., Costa Mesa, CA, United States
Kraslavsky, Andrew J., Rancho Santa Margarita, CA, United States
Kalwitz, George A., Costa Mesa, CA, United States
Assignee: Canon Kabushiki Kaisha, Tokyo, Japan (non-U.S. corporation)

Appl. No.: 92-978499
Filed: 18 Nov 1992

Int. Cl. H04L012-18
Issue U.S. Cl. 395/200.010; 395/650.000; 395/800.000; 364/DIG.001; 364/DIG.002
Current U.S. Cl. **709/203.000; 709/219.000**
Field of Search 395/200; 395/650; 395/800; 395/200.01

Reference Cited

PATENT DOCUMENTS

Patent Number	Date	Class	Inventor
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US 4866664	Sep 1989	364/900.000	Burkhardt, Jr. et al.
US 4974199	Nov 1990	364/900.000	Verbanets, Jr. et al.
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Art Unit - 235
Primary Examiner - Treat, William M.
Assistant Examiner - Maung, Zarni
Attorney, Agent or Firm - Fitzpatrick, Cella, Harper & Scinto

18 Claim(s), 31 Drawi[redacted]Figure(s), 31 Drawing Page(s)

ABSTRACT

Method and apparatus for **advertising** two network servers from a single network node in a LAN communication system which supports ***advertising*** only a single network server from any one node. A surrogate server is configured at the network node to listen for network broadcasts to a proprietary socket and then interleavedly **advertises** that the services of the first and second network servers (the "**client**" servers) are available from the node. When a network broadcast request addressed to the proprietary socket is received, the surrogate server responds to the request if directed to one of its **clients**, thereby permitting direct communication to be established with the designated one of the first or second network servers, for example, over the communication socket which is different from the proprietary socket.

L41 ANSWER 9 OF 14 USPATFULL
United States Patent

Patent Number: 5568612
Date of Patent: 22 Oct 1996

Method and apparatus for **advertising** services of two network servers from a single network node

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ABSTRACT

Method and apparatus for **advertising** two network servers from a single network node in a LAN communication system which supports ***advertising*** only a single network server from any one node. A surrogate server is configured at the network node to listen for network broadcasts to a proprietary socket and then interleavedly **advertises** that the services of the first and second network servers (the "**client**" servers) are available from the node. When a network broadcast request addressed to the proprietary socket is received, the surrogate server responds to the request if directed to one of its **clients**, thereby permitting direct communication to be established with the designated one of the first or second network servers, for example, over the communication socket which is different from the proprietary socket.